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CENTRAL FAX CENTER**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

MAY 14 2004

Application: 09/511168) Examiner: Shick C. Hom
First Inventor: Wei) Art 2739
Filingdate: February 24, 2000)
Attorney Docket: FSP0054)
Client Docket: AWS 761.US)
)
Title: INTELLIGENT PRESENTATION NETWORK MANAGEMENT SYSTEM)
)

OFFICIAL

APPEAL BRIEF

Appeal is taken from the Examiner's action on November 18, 2003.

REAL PARTY IN INTEREST

The real party in interest is AT&T Wireless Services, Inc., the assignee of all rights and interest in the subject matter of this appeal.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 1-21 are presently pending.

Claims 1-6 and 15-19 stand rejected as anticipated under 35 U.S.C. 102(b) by Henderson, et al. (U.S. Patent No. 5,726,979)

Claims 14 and 20 stand rejected as unpatentable over Henderson (5,726,979) in view of Cutrer et al. (U.S. Patent No. 5,668,562).

Claims 7-13 and 21 would be allowed if rewritten to include the limitations of the base claim and any intervening claims.

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Claims 1-6, 14-17, and 19-20 are the subject of this appeal.

STATUS OF AMENDMENTS

No amendments were filed after final rejection.

SUMMARY OF INVENTION

The invention relates to communication network management. One aspect of the invention involves establishing a hierarchy of geographical areas in the communication network. See FIG. 2 and Page 9, lines 4-15. Higher levels of the hierarchy include a plurality of areas from lower levels of the hierarchy. Again see FIG. 2 and Page 9, lines 4-15. Network elements from lower levels of the geographic hierarchy are summarily represented at higher levels. See Page 8, line 20 to page 9, line 3. When the failure of network elements at a lower level is detected, an alarm is sent to a higher level summarizing the failure. In response to the alarm, failed network elements at a particular lower level of the geographical hierarchy are identified and located. See page 11, line 20 to Page 12, line 2.

ISSUES

1. Are Claims 1-6 and 15-19 anticipated under 35 U.S.C. 102(b) by Henderson, et al. (U.S. Patent No. 5,726,979)?

2. Are claims 14 and 20 unpatentable over Henderson (5,726,979) in view of Cutrer et al. (U.S. Patent No. 5,668,562)?

GROUPING OF CLAIMS

Claims 1-14 stand or fall together as Group I.

Claims 15-17 stand or fall together as Group II.

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Claims 18 stand or fall together as Group III.

Claims 19-21 stand or fall together as Group IV.

ARGUMENT

Please consider the following arguments in favor of withdrawing the claim rejections.

Are Claims 1-6 and 15-19 anticipated under 35 U.S.C. 102(b) by Henderson, et al. (U.S. Patent No. 5,726,979)?

The Examiner contends that Henderson discloses the establishment of a hierarchy of geographical areas in the communications network (citing to FIGS. 2A-B and Column 7, Lines 28-54); an area at a higher level of the hierarchy includes a plurality of areas at a lower level of the hierarchy (citing to Column 7, Lines 28-54, Column 8, Lines 1-23, and Column 15, Lines 16-22); representing each network element in a geographical area at a first level in the geographical hierarchy (citing to Column 8, Lines 48-67); and summarizing the representation of network elements at a second level in the geographical hierarchy, higher than the first level of the geographical hierarchy (citing to Column 10, Lines 5-14).

Henderson discloses a network management system ("NMS") that employs an object model representation of the network configuration. Henderson does not teach or suggest the use of a hierarchical geography scheme to represent network elements.

Henderson does not utilize a hierarchical geographical map, where "geographical" is used in the ordinary sense to represent an area or location, e.g., a country, state, county, city, or the like. FIG. 2A of Henderson describes a TMN-compliant object model view of a network. FIG. 2B of Henderson describes a CORBA-compliant class hierarchy representation of a network. Neither object model makes any provision for representing a geographical hierarchy. Rather, Henderson teaches a network topology in which all network elements are represented at the same geographical level.

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The object models of Henderson make no provision for higher geographic levels in which pluralities of network elements are represented in a summary fashion. As FIG. 2A and FIG 2B plainly demonstrate, no classes are provided to indicate levels of a geographic hierarchy, no classes are provided to indicate a network element's membership in a level of a geographic hierarchy, and no classes are provided to summarize pluralities of network elements.

For at least these reasons, there is no "establishing a hierarchy of geographical areas in the communication network, where an area at a higher level of the hierarchy includes a plurality of areas at a lower level of the hierarchy", as recited in Claim 1. There is no "representing each network element in a geographical area at a first level in the geographical hierarchy", or "summarizing the representation of network elements at a second level in the geographical hierarchy, higher than the first level of the geographical hierarchy", as recited in Claim 1. There is no "representing the communications network as a hierarchy of geographical areas, where an area at a higher level of the hierarchy of geographical areas includes a plurality of areas at a lower level of the hierarchy of geographical areas" as recited in Claim 15. There is no "application connected to said database to organize the communications network into a hierarchical arrangement of geographic areas, where each network element is located at a lower level in the hierarchy of geographical areas" as recited in Claim 19.

Henderson, at Column 10, lines 20-32, teaches the object model applied to represent "current" and "future" views of the network. Both such views are represented at a single geographical level. The one-level nature of the topographical and topological views are elucidated more fully by FIG. 5A-FIG. 5C, and at Column 13, line 66 through Column 14, line 36.

At Column 15, lines 16-56, Henderson describes zoomed views of the network model. While zooming is mentioned as a feature of the system, there is no teaching of providing such zoom by establishing a hierarchy of geographical areas in the communication network, where an area at a higher level of the hierarchy includes a plurality of areas at a lower level of the hierarchy. Nor does Henderson teach zooming by representing the communications network as a hierarchy of geographical areas, where an area at a higher level of the hierarchy of geographical areas includes a plurality of areas at

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a lower level of the hierarchy of geographical areas. Rather, Henderson teaches zooming by scaling icons to larger sizes, and resolving clustered icons, within a single geographical level. See Column 15, lines 16-56.

The present invention avoids the complex icon scaling and de-clustering technology of Henderson. Zooming may be accomplished by replacing the display of a higher geographical level of the hierarchy in which network elements are summarized, with display of a lower level of the geographic hierarchy in which network elements are resolved and appropriately sized. See Page 10, line 15 to Page 12, line 2, and Page 15, line 24 to Page 17, line 2.

Regarding status and alarms (e.g. Claims 1, 3, 4, 7, 8, 15, etc.), Henderson fails to teach establishing a hierarchy of geographical areas in the communication network. Because the geography of Henderson lacks levels, Henderson cannot teach the summarization of network elements at the higher level in the geographical hierarchy including triggering an alarm at the second hierarchical level in response to the condition of a particular network element represented at the first level. Henderson cannot teach representing the status of a plurality of the network elements as a second icon on a map of geographical areas on a second level of the geographical hierarchy.

For at least the above reasons, Henderson does not anticipate any of independent claim 1, claims 2-14 (which variously depend from claim 1), independent claim 15, claims 16-17 (which variously depend from claim 15), independent claim 18, or independent claim 19. Accordingly, Applicant requests the withdrawal of the §102 rejection of those claims.

Are claims 14 and 20 unpatentable over Henderson (5,726,979) in view of Cutrer et al. (U.S. Patent No. 5,668,562)?

As discussed above, Henderson does not disclose a number of limitations recited in claims 14 and 20. These limitations are also absent from Cutrer (and the Examiner does not rely on Cutrer to provide them). Therefore, the proposed combination of Henderson and Cutrer lacks elements recited in Claim 14 and Claim 20, and the Examiner has failed to satisfy the *prima facie* requirements for obviousness.

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For at least the above reasons, Claims 14 and 20 are allowable over the combination of Henderson in view of Cutrer; and Applicant requests the withdrawal of the §103 rejection of those claims.

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APPENDIX

1. A method for managing network elements in a communications

network comprising:

establishing a hierarchy of geographical areas in the communication network, where an area at a higher level of the hierarchy includes a plurality of areas at a lower level of the hierarchy;

representing each network element in a geographical area at a first level in the geographical hierarchy; and

summarizing the representation of network elements at a second level in the geographical hierarchy, higher than the first level of the geographical hierarchy.

2. The method of claim 1 in which the establishment of the

hierarchy of geographical areas includes establishing n levels of geographical areas in the network, where each n th level geographical area includes a plurality of $(n-1)$ th level geographical areas, and in which the summarization of network elements includes summarizing the representation of network elements at $(n-1)$ levels of geographical areas.

3. The method of claim 1 wherein the management of the

communication network includes monitoring the condition of the network elements, in which the representation of network elements in the geographical area includes representing the condition of network elements, and in which the summarization of network elements at the higher level in the geographical hierarchy includes triggering an

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alarm at the second hierarchical level in response to the condition of a particular network element represented at the first level.

4. The method of claim 3 wherein the communication network is managed in real-time, and further comprising, following the representation of each network element in the geographical areas:

updating the condition of network elements represented in the first level of the geographical hierarchy; and

in which the summarization of network elements at the higher level in the geographical hierarchy includes setting the alarm at the second hierarchical level in response to changes in the condition of network elements.

5. The method of claim 4 in which the representation of each network element in the geographical areas includes representing the network element as a first icon on a map of geographical areas on the first level of the geographical hierarchy.

6. The method of claim 5 in which the representation of each network element in the geographical areas includes representing the condition of the network element with the first icon that varies with respect to the status of the network element.

7. The method of claim 6 in which the summarization of network elements at the higher level in the geographical hierarchy includes representing

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the status of a plurality of the network elements as a second icon on a map of geographical areas on the second level of the geographical hierarchical.

8. The method of claim 7 further comprising, preceding the summarization of network elements at the higher level in the geographical hierarchy: establishing a set of rules defining the meaning of the second icon.

9. The method of claim 8 in which the summarization of network elements at the higher level in the geographical hierarchy includes the second icon being the coloration of geographical area.

10. The method of claim 8 in which the summarization of network elements at the higher level in the geographical hierarchy includes summarizing the status of a plurality of the network elements with textual annotation.

11. The method of claim 7 wherein management of the network includes the installation of network elements into the communications network, and in which the representation of each network element in the geographical area includes entering the latitude and a longitude of the network element upon installation into the network.

12. The method of claim 8 wherein network management is supervised, and further comprising:

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creating supervisor identities; and

in which the establishment of rule-sets includes establishing a set of rules for each supervisor identity.

13. The method of claim 8 in which the establishment of rule-sets includes defining a set of rules responsive to conditions selected from the group consisting of power source status, software corruption, hardware failure, environmental factors, and intrusion into the network elements.

14. The method of claim 1 wherein the communications network is a fixed wireless service (FWS) including base stations and remote units, and in which the representation of each network element in the geographical area includes representing the geographical positions of network base stations and remote units.

15. A method for determining the failure of a network element in a communications network comprising:
representing the communications network as a hierarchy of geographical areas, where an area at a higher level of the hierarchy of geographical areas includes a plurality of areas at a lower level of the hierarchy of geographical areas;
detecting the failure of network elements;
sending an alarm to the higher level in the geographical hierarchy summarizing the failure of the network elements; and

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in response to the alarm, identifying and locating failed network elements at a particular lower level of the geographical hierarchy.

16. The method of claim 15 in which the representation of the communications network as the hierarchy of geographical areas includes representing the communications network as a hierarchical arrangement of geographical maps where a map at the higher level of the hierarchy of geographical areas includes a plurality of maps from the lower level of the hierarchy of geographical areas.

17. The method of claim 16 in which the sending of the alarm to the higher level in the geographical hierarchy summarizing network element failures includes defining an alarm trigger that is responsive to the network element failures.

18. A method for determining the failure of a network element in a communications network comprising:
monitoring a geographical map which summarizes the status of a plurality of network elements in the communications network;
on the map display, receiving an alarm representing the failure of network elements; and
in response to the alarm, narrowing the scale of the map to geographically locate failed network elements.

19. A system for presenting a communications network

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comprising:

a plurality of network elements having geographic locations;

a database including the geographical locations of the network elements;

an application connected to said database to organize the communications network into a hierarchical arrangement of geographic areas, where each network element is located at a lower level in the hierarchy of geographical areas, said application summarizing the representation of the plurality of network elements at a higher level in the hierarchy of geographical areas;

a display having an input connected to said application to present a modifiable display of network elements as represented in multiple levels in the hierarchy of geographical areas; and

a supervisor interface connected to said application, said supervisor interface providing commands to said application to modify said display.

20. The system of claim 19 wherein the communications network is a fixed wireless system (FWS); and
in which the network elements are base stations and remote units.

21. The system of claim 20 in which said base stations and remote units have an operational and a non-operational status;
in which said database is updated on the status of each said base station and remote unit;
in which said application summarizes the status of said base stations and remote units at the higher hierarchical level; and

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in which said display presents said application summaries.

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